CLAIMS

What is claimed is:

1. A Media Access Control (MAC) bus interface that enables communication between a network side block and a system side block, comprising;

a data out bus that enables data to be transferred from the system side block to the network side block comprising a first data bus and a first set of handshake signals;

an out message bus that enables data transfer control messages to be transferred from the network side block to the system side block comprising a second data bus and a second set of handshake signals; and

a data in bus that enables data to be transferred from the system side block to the network side block comprising a third data bus and a third set of handshake signals.

2. The MAC bus interface of claim 1, wherein the first set of handshake signals corresponding to the data out bus comprise:

a request signal sent from the system side block to the network side block that is used to request a transfer of data to the network side block;

a transfer ready signal from the network side block to the system side block that is asserted by the network side block to inform the system side block that the network side block is ready to receive data; and

a hold signal issued sent from the system side block to the network side block that may be asserted to control a timing of the transfer of data.

3. The MAC bus interface of claim 1, wherein the second set of handshake signals corresponding to the out message bus comprise:

a message request signal from the network side block to the system side block that is used to request a transfer of the message data from the network side block to the system side block; and

a message transfer ready signal asserted by the system side block to inform the network side block that the message data may be received by the system side block.

4. The MAC bus interface of claim 1, wherein the third set of handshake signals corresponding to the data in bus comprise:

a request signal sent from the network side block to the system side block that is used to request a transfer of data to the system side block;

a transfer ready signal sent from the system side block to the network side block that is asserted by the system side block to inform the network side block that the system side block is ready to receive data; and

a hold signal issued from the network side block to the system side block that may be asserted to control a timing of the transfer of data.

5. The MAC bus interface of claim 1, further comprising at least one bus multiplexor that enables a system side block to communicate with at least two network side blocks.

6. The MAC bus interface of claim 5, comprising at least one set of cascaded multiplexors that enable a system side block to communicate with at least four network side blocks.

7. A Media Access Control (MAC) interface multiplexor for multiplexing communication signals between a system side block and at least two network side blocks, comprising:

a first multiplexor that provides multiplexing of a data out bus that enables a transfer of data from the system side block to said at least two network side blocks in response to a first set of handshaking signals received by the first multiplexor;

a second multiplexor that provides multiplexing of a data in bus that enables a transfer of data from said at least two network side blocks to the system side block in response to a second set of handshaking signals received by the second multiplexor; and

a third multiplexor that provides multiplexing of a message out data bus that enables a transfer of message data from said at least two network side blocks to the system side block in response to a third set of handshaking signals received by the third multiplexor, said message data specifying data format information corresponding to a network side block that issues the message data.

8. The MAC multiplexor of claim 7, wherein the first multiplexor comprises:

a first and second data buffer, each having a first output and an input connected to a system side portion of the data out bus enabling the data buffers to receive data from a system side block;

a first multiplexor, connected to the first outputs of each of the first and second data buffers and having an output connected to a first network side portion of the data out bus to which a first network side block is connected;

a second multiplexor, having an input connected to the first outputs of each of the first and second data buffers and having an output connected to a second network side portion of the data out bus to which a second network side block is connected; and

a control, providing respective control signals to each of the first and second data buffers and each of the first and second multiplexors, said control producing said respective control signals in response to

handshaking signals it receives from the first and second network side blocks and the system side block.

9. The MAC multiplexor of claim 8, wherein each of the first and second data buffers have a second output connected to the control through which network routing information is passed to the control.

10. The MAC multiplexor of claim 7, wherein the second multiplexor comprises:

a first multiplexor, having an output and an input connected to first and second network side portions of the data in bus that enable the first multiplexor to receive data from first and second network side blocks;

a first and second data buffer, each having an input connected to the output of the first multiplexor and an output;

a second multiplexor, having an input connected to the output of each of the first and second data buffers and having an output connected to network side portion of the data in bus to which a system side block is connected; and

a control, providing respective control signals to each of the first and second data buffers and each of the first and second multiplexors, said control producing said respective control signals in response to handshaking signals it receives from the first and second network side blocks and the system side block.

11. The MAC multiplexor of claim 7, wherein the third multiplexor comprises:

a multiplexor, having an output and an input connected to first and second network side portions of the data in bus that enable the first multiplexor to receive message data from first and second network side blocks and having an output connected to network side portion of the data in bus to which a system side block is connected; and

a control, providing control signals to the multiplexor in response to handshaking signals it receives from the first and second network side blocks and the system side block.

12. The MAC multiplexor of claim 7, wherein the first, second, and third multiplexors share a single control the controls a flow of data through each of the multiplexors in response to control signals the control receives from a first and second network side block and a system side block.

13. The MAC multiplexor of claim 7, wherein the control multiplexes handshake signals it receives from the system side block and sends the handshake signals to an appropriate network side blocks from among said at least two network side blocks.

14. The MAC multiplexor of claim 7, wherein the control multiplexes handshake signals it receives from said at least two network side blocks and forwards the handshake signals to the system side block.

15. A method of transferring data across a Media Access Control (MAC) interface, comprising:

sending outbound data from a sending side block to a receiving side block;

asserting a data transfer request signal from the sending side block;

issuing a transfer signal from the receiving side block to the sending side block to inform the sending side block that the receiving side block is latching the outbound data;

sending a transfer message data from the receiving side block to the sending side block;

asserting a transfer message data request signal from the receiving side block to the sending side block; and

issuing a transfer message data transfer signal from the sending side block to the receiving side block to inform the receiving side block that the sending side block is latching the transfer message data.

16. The method of claim 15, wherein the receiving side block comprises a system side block and the sending side block comprises a network side block.

17. The method of claim 17, wherein the transfer message data includes formatting information corresponding to data format requirements for sending data to the network side block.

18. The method of claim 17, further comprising:

embedding routing information in the outbound data; and

routing the outbound data to an appropriate network side block based on the routing information.

19. The method of claim 17, further comprising multiplexing the outbound data and transfer message data so that data may be transferred from the system side block to a particular network side block that is selected from among a plurality of network side blocks.

20. The method of claim 15, wherein a first word of the outbound data and the data transfer request signal are sent at substantially the same time.

21. The method of claim 15, wherein a word of the transfer message data and the transfer message data request signal are sent at substantially the same time.

22. The method of claim 15, further comprising:

enabling the sending side block to assert a hold signal to inform the receiving side that additional outbound data is not presently ready to be sent.